

CLAIMS

1. A process for preparing methanol from a synthesis gas comprising carbon monoxide, carbon dioxide and hydrogen
5 by steps of:
 (a) passing the synthesis gas into a reactor containing a solid methanol conversion catalyst particles being suspended in a liquid phase of methanol and water;
 (b) reacting the synthesis gas in presence of the suspended
10 catalyst at a pressure and temperature, where methanol being formed on the catalyst condenses into the liquid phase; and
 (c) withdrawing from the reactor a part of the liquid phase containing formed methanol product.
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2. A process in accordance with claim 1, wherein amount of water being present in the liquid phase is 0-10 wt%, preferably 0-3 wt%.
- 20 3. A process in accordance with claim 1, wherein the pressure in the slurry bed reactor is 50-290 bar, preferentially 60-140 bar.
4. A process in accordance with claim 1, wherein the
25 temperature in the slurry bed reactor is between 150°C to 240°C, preferentially 180-225°C.
5. A process in accordance with claim 1, wherein the synthesis gas has a CO₂/CO molar ratio of 0.02-1.0 and an
30 H₂/CO molar ratio of 2-4.

6. A process in accordance with claim 1, wherein the synthesis gas comprises 15-35 vol.% CO, 60-74 vol.% H₂ and 0-15 vol.% CO₂.
- 5 7. A process of claims 1 further comprising of a step of recycling an effluent gas stream being withdrawn from the reactor.
- 10 8. A process of claim 1, wherein the reacting synthesis gas is cooled by internal cooling means.
9. A process of claim 1, wherein methanol and/or catalyst is added as fresh or being recycled to the reactor.
- 15 10. A process according to claim 1,
comprising the further step of recycling a stream comprising methanol and at least one of the compounds of methyl formate, ethanol is recycled to the reactor.